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ABSTRACT

Substantial changes in the structure of the United States economy in the next 10 to 20 years will affect the uses of vocational education. Growth of the civilian labor force will be slower, the share of government employment will decline, a higher proportion of the gross national product will originate in manufacturing, and the labor force will consist increasingly of better educated persons in their prime working age. To adapt to the new conditions of the labor market, most of vocational education's present institutions will remain in place, but their functions will change. The stress in career education is likely to shift from entry job orientation to career ladders. Training programs will be used to instill positive work attitudes. Broadening of employment opportunities to youth in secondary programs is likely. Most emphasis will probably be focused on service job training. Formal apprenticeship programs will not be expanded, although community- or school-sponsored programs may be established. Postsecondary vocational education may grow from (1) new federal programs to subsidize business, (2) requirement that businesses set aside funds to finance additional training of the labor force, and (3) an American economy rededicated to quality. (YLB)

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THE FUTURE ROLE OF VOCATIONAL EDUCATION

By

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Introduction

What role will vocational education play in the next 10 or 20 years? How will this role change? One's perception of the future role of training "to do things" in American society is unavoidably colored by one's anticipation of both the character of the U.S. economy and the nature of vocational training in this country. This essay contends that substantial changes will take place in the structure of the U.S. economy, and that these changes will affect the uses of vocational education.

Between now and 1990, according to the BLS, the civilian labor force will increase by 15 million persons. This represents a rate of growth one-fourth slower than that experienced between 1970 and 1980. More importantly, there is a general consensus that the growth of federal, state and local government employment will decrease. These BLS projections also anticipate that government employment, which provided 16.8 percent of all jobs in 1977, and declined to an estimated 16.0 percent by 1980, is expected to shrink further to 14.9 percent in 1990. The projections in this study anticipate that the share of government employment will decline even more than this. I assumed that the popular pressure to hold down taxes will result in holding down the number of public servants to their current level, and that employment in education will decline in proportion to the decline in enrollments. With these assumptions, the estimated proportion of government employees in 1990 is 13 percent of the "intermediate" labor force projection of

the BLS.[1]

The next two decades are likely to witness other departures from past trends. There is a growing consensus that the decade of the 1980's, as well as the one which follows it, will probably be quite different from the 1960's and 1970's. This view is now being shared even by the relatively conservative Bureau of Labor Statistics.

There are a number of reasons for this prognosis. The slower rate of growth of the labor force and the deterioration of the terms of trade of other goods relative to energy, with the consequent downward pressure on U.S. living standards, are likely to cause drastic shifts in expectations of consumers, and will be reflected in different rates of growth in various sectors.

Thus, BLS anticipates that, under the intermediate growth projection, the share of services in the economy will stop growing, the share of employment in manufacturing will stabilize roughly at the 1975/76 levels, and that in trade and finance will grow at the expense of construction.[2]

I favor an alternative scenario, dubbed as "reindustrialization," which assumes that a high proportion of the gross national product will originate in manufacturing. There

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[1] U.S. Department of Labor, Bureau of Labor Statistics, Employment Projections for the 1980's, Bulletin 2030, 1979, see especially pp. 9, 19.

[2] Ibid, p. 54.

are three reasons to favor this scenario:

(1) the increasing cost of imported energy will continue forcing the U.S. to produce more goods and services to pay for oil and gas,

(2) the relative prices of manufactured goods are continuously becoming more attractive, compared to prices of services, and

(3) the government policy to favor the rebuilding of productive capacity also favors manufacturing employment.

The implications for employment patterns of the BLS projections and my alternative projections are summarized in Table 1.

TABLE 1

DISTRIBUTION OF EMPLOYMENT BY MAJOR SECTOR IN 1990
(millions of workers)

	BLS[1]	This Study
Total Civilian Employment	118.6	
Government	17.5	15.5
Agriculture	2.6	2.9
Non-Agriculture	98.5	104.6
of which manufacturing	23.9	27.5
Transportation, communication, public utilities	5.7	5.7
Trade	27.4	25.4
Finance, insurance and real estate	6.7	6.0
Other services	26.7	24.7
Private households	1.3	1.6

[1] Ibid, p. 32.

The BLS projects employment in manufacturing to increase by roughly 10 percent between 1980 and 1990. My projections place the increase at roughly thirty percent. My projection differs from that of the BLS in the following way:

(1) a shortfall of 0.7 million employees in finance services, (2) 2.0 million fewer workers in federal and state employment, (3) 2.0 million fewer service employees, (4) four million more workers in manufacturing. These projections take into account (1) the continuation of the technological revolution in private non-manufacturing industry, and (2) considerably more conservative assumptions about the willingness of the U.S. electorate to finance services for the poor.

There will probably be no drastic declines in the demand for commercial services (sales, banking, insurance, etc.), but I expect that they will become more dependent on machinery and, especially, data processing and communication equipment. Hence, an increased volume of services will be provided by fewer people than anticipated in the service and government sectors. Also, an increased proportion of the service industry will be mechanized, resulting in ben[illegible] t[illegible] the manufacturers of the support equipment.

These assumptions need not be defended at length against charges that they are overly influenced by recent political developments. They are based on a projection prepared in the late 1970's, and have been borne out by recent trends.[3]

According to the BLS, the 1990 labor force will show

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[3]Joseph Froomkin, Supply and Demand for Persons with Post-secondary Education, EPRC for Higher Education and Society, 1976, p. 17.

an increased concentration of persons of the prime working ages. It is projected that over two-thirds of the workers will be aged 25-54, as compared to some 60 percent in 1980. By contrast, the proportion of younger workers, 16-24, which in 1980 was roughly 23 percent of all civilians available for employment, will decline to 17 percent. The fraction of women in the labor force will increase from some four in ten of the total to nine in twenty. If present trends continue, an increasing proportion of women will be working full-time.[4]

Thus, in the next 10-20 years, the labor force will consist increasingly of persons in their prime working age, and, equally importantly, it is likely to become slightly more feminized. More importantly, this labor force will be better educated. The proportion of labor force participants who did not graduate from high school (35 percent in 1970 and 22 percent in 1979) is likely to drop to 15 percent in 1990, and possibly hit a low of 10-12 percent in the year 2000. By contrast, the number of more highly educated workers will continue growing. Between 1970 and 1979, the proportion of workers with one or more years of postsecondary education increased from a quarter to a third.[5] By 1990-2000, we can expect between four in ten and nine in twenty potential workers to have

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[4]BLS, op cit, p. 5.

[5]Anne McDougall Young, "Trends in Educational Attainment Among Workers in the 1970's," Monthly Labor Review, Vol. 103, No. 7 (July 1980), p. 44.

completed one or more years of postsecondary education.

In the future, highly educated workers will be filling positions formerly held by persons with less education. Already between 1970 and 1979, the proportion of blue-collar and service jobs held by workers with one to three years of college education or four or more years of college increased dramatically. (See Table 2.) More college-educated persons will fill non-white-collar jobs.

TABLE 2

PROPORTION OF WORKERS 25 YEARS AND OVER WITH POSTSECONDARY TRAINING IN MAJOR OCCUPATIONAL GROUPS, BY EDUCATIONAL ATTAINMENT AND SEX, MARCH 1970 AND MARCH 1979

Sex and Occupation	Percent with 1-3 years of college		Percent with 4 years of college or more	
	1970	1979	1970	1979
Men				
Total	11.6	17.2	15.4	23.9
White-collar workers	18.9	21.0	34.7	46.5
Professional and technical workers	17.2	16.2	60.5	70.6
Managers & administrators	19.7	22.2	25.6	35.9
Sales workers	22.0	26.9	19.2	32.8
Clerical workers	18.4	25.8	10.3	18.5
Blue-collar workers	6.2	13.8	1.6	3.6
Service workers	8.5	16.8	2.6	7.7
Farmers & farmworkers	5.7	9.6	3.2	7.7

TABLE 2 (Cont'd)

PROPORTION OF WORKERS 25 YEARS AND OVER WITH POSTSECONDARY TRAINING IN MAJOR OCCUPATIONAL GROUPS, BY EDUCATIONAL ATTAINMENT AND SEX, MARCH 1970 AND MARCH 1979

Sex and Occupation	Percent with 1-3 years of college		Percent with 4 years of college or more	
	1970	1979	1970	1979
Women				
Total	11.4	17.1	11.4	17.8
White-collar workers	16.5	21.1	18.6	25.6
Professional and technical workers	19.1	19.1	54.2	63.3
Managers & administrators	16.7	22.3	13.9	24.2
Sales workers	10.8	19.1	3.6	11.3
Clerical workers	16.4	22.4	4.2	7.9
Blue-collar workers	3.0	6.1	.7	2.3
Service workers	5.1	11.9	1.1	3.0
Farm & farmworkers	6.3	11.9	2.4	9.4

Source: Anne McDougall Young, "Trends in Educational Attainment Among Workers in the 1970's," Monthly Labor Review, Vol. 103, No. 7 (July 1980), Table 3.

Furthermore, while industries which grew fast between 1950 to 1970 were heavily staffed with professionals and managers, in the 1980's and 1990's employment growth is likely to take place in industry segments where the proportion of professionals and managers to total employment is low. In other words, fewer new jobs will open up in occupations favored by college graduates or persons with some college education. According to one set of projections, two or three new entrants with postsecondary training will compete for the type of job

formerly held by a person with this level of education in 1980.[6]

The market for managerial and professional jobs will be tough and competitive. If past trends are any guide, the promotion opportunities of older, able workers will be blocked in both white- and blue-collar high-paying occupations by the competition from younger persons with more impressive academic credentials.[7]

The Current Structure of Vocational Training

What do these changes in labor market conditions portend for vocational education's future? Anywhere outside of the United States, the answer would be obvious; the blueing of the collars of the U.S. labor force would buttress the role of vocational education in the training arena. In the United States, the answer to this question is far from obvious.

The uncertainties in the future role of vocational education stem from the public's confusion about what constitutes vocational education and what does not. While educators can make this distinction, students often do not distinguish one curriculum stream from another. In 1970, the U.S. Bureau of the Census was unable to obtain accurate information about the extent of vocational training. Its attempt to estimate the number of persons taking training for job-related purposes

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[6]Joseph Froomkin, op. cit., p. 17.

[7]A. J. Jaffe and Joseph Froomkin, "Occupational Opportunities for College-Educated Workers, 1950-75," Monthly Labor Review, Vol. 101, No. 6 (June 1978).

in 1976 was not very successful either. The Census Bureau concluded[8]

> Information gained from the National Content Test suggests that the meaning of "vocational training" may not be clear to respondents, which may be partly due to the lack of a national consensus on the meaning of a vocational education program. The amount of variation in the type of training which might be considered vocational (such as the addition of adult education programs in colleges in recent years) is so great that summary measures are not highly successful. Vocational training may occur in many different forms, thus making it difficult to distinguish occupational education from courses intended for nonoccupational reasons.

Participation in a vocational education program does not necessarily preclude attendance at a postsecondary institution, nor does participation in one specific vocational training program preclude subsequent employment in some unrelated occupation. Compared to conditions in Western Europe, the link here between vocational training and the labor market is more tenuous. This is caused both by the fluidity of the U.S. labor market and the availability of opportunities to obtain training at different stages of one's working life, under a variety of circumstances.

State Commissions reported that some 16 plus million persons were enrolled in vocational education courses and programs during the academic year 1977-78. The reported figures by program and by level are reproduced in Table 3. These figures are, at best, indicative of the magnitudes of

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[8]U.S. Bureau of the Census, Current Population Reports, Series P-20, No. 343, "Vocational School Experience: October 1976," U.S. Government Printing Office, Washington, D.C., 1979, p.11.

TABLE 3

ENROLLMENT IN VOCATIONAL EDUCATION, BY PROGRAM, AND BY LEVEL
PROGRAM YEAR 1978
(July 1, 1977 - June 30, 1978)

Programs	Total	Female	Secondary	Post-Secondary	Adult	Cooperative
Grand Total (Unduplicated)	16,704,926	8,419,428	10,236,117	2,089,170	4,379,639	580,316
For Employment	10,429,827	4,766,802	4,940,997	2,006,964	3,481,866	562,666
Agriculture	1,006,542	173,824	715,272	57,538	233,732	28,610
Distribution	962,009	495,738	397,429	248,109	316,471	193,046
Health	758,808	591,764	131,907	233,279	393,622	23,909
Occupational Home Ec.	459,590	378,965	252,566	74,228	132,796	39,751
Office	3,312,475	2,506,368	1,934,722	639,863	737,890	132,666
Technical	527,681	93,001	39,273	330,441	157,967	7,754
Trades and Industry	3,402,722	527,142	1,469,828	423,506	1,509,388	136,930
Special Programs	3,509,351	1,139,720	3,223,774	51,173	234,404	27,393
Guidance	1,508,189	702,036	1,455,126	22,485	30,578	1,634
Remedial	101,904	45,844	48,858	20,042	33,004	365
Industrial Arts	1,492,790	256,611	1,479,121	37	13,632	114
Other N.E.C.	406,468	135,229	240,669	8,609	157,190	25,280
Consumer and Homemaking	3 659,441	2,946,101	2,795,949	52,340	811,152	1,687

Note: No reports were available from Maine or Guam. Only postsecondary enrollments were reported by Minnesota.

Source: U.S. Department of Education, Office of Adult and Vocational Education.

enrollments. Other surveys, also under federal government auspices, produced lower estimates.[9]

Based on state commission figures, only 62 percent of all enrollees received vocational training for employment. Included in this figure are the highly doubtful 3 percent enrolled in occupational home economics. At the secondary level, fewer than one-half of all enrollees were in programs designed to prepare persons for employment. A full quarter of all enrollees were taking consumer and homemaking courses, and ten percent or so were in guidance or industrial arts programs.

Another striking fact was that similar subjects were taught on various levels. For instance, it was reported that 390 thousand students were enrolled in secretarial and related courses in high school. Another 152 and 159 thousand were taking these courses in postsecondary and adult education settings. Training for occupations labeled identically were being offered at all levels, and in all combinations.

This list of hard core or traditional vocational education instruction does not exhaust the scope of vocational training in the U.S. It excludes training by CETA, apprenticeship training, and the vocational programs in colleges and universities in such fields as law, teaching or medicine. Nor does it take into account academic courses pursued by adults

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[9]For a discussion of enrollments see, U.S. Department of Education, National Institute of Education, The Vocational Education Study: The Interim Report, September 1980, Chapter VI, pp. VI-2 to VI-7.

to further their career goals. It is much easier to discuss the future of vocational education if one considers it to be a continuum which goes from guidance through formal vocational and training courses to occasional shoring up of qualifications by adults. A useful way of characterizing this continuum is to look at preparation for work as extending from education, to education and training, and ending up with training.

This approach permits focusing on the fastest-growing component in this gamut--"career education." Introduced during the past 10 years, these programs have given guidance a new lease on life. Their scope varies from the limited traditional orientation concerning the level of training or education required for different jobs to broader assessments of the qualifications and strengths of students and the way they can be used to obtain desirable jobs. In some instance, "career education" even includes hands-on exposure to working situations.

In the public sector, out of the 1.5 million persons enrolled in guidance programs in 1977/78, 96 percent were high school students, many of them taking part in career education programs. Guidance programs for postsecondary and adult students are either an unidentifiable part of an instructional program, or are provided by private guidance and counselling firms.

The actual employment training provided under vocational education programs at the high school level reached

roughly 5.0 million students. An additional 3.5 million secondary students were instructed in courses which had less direct relevance to employment training, but were administered by vocational education teachers. Thus, at the secondary level, vocational educators are performing three functions: training for work, running guidance programs, and offering a curriculum to those for whom academic programs are unattractive.

Vocational preparation of younger workers is moving increasingly outside of traditional school settings as Department of Labor-administered programs for disadvantaged youths gain in importance. In fiscal 1978, these programs, mostly funded under CETA, involved at one time or another during that year roughly 4.0 million workers. Some 600 thousand participants in CETA programs were involved in classroom training, but it is not possible to determine how much of the classroom instruction was academic/remedial and how much was vocational. Formal apprenticeship programs reach roughly 400 thousand youths per year. Most apprenticeship programs are of long duration, and prepare workers for craft or skilled blue-collar occupations.[10]

Older students have additional opportunities to obtain vocationally related training in a variety of settings. Some courses are offered by secondary schools, others by private

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[10] These figures are published in Employment and Training Report to the President submitted annually to the U.S. Congress. In the case of apprenticeships, the total number of apprentices is generally one-fourth of those undergoing training, implying that the average length of programs is four years.

technical training institutes, and still others by community colleges and four-year institutions. Roughly 400 thousand students enroll in occupational programs full time. Another million or so attend postsecondary professional programs in business, education, law and medicine on a full-time basis. Of the 15 million high school graduates who participated in part-time training, 8.3 million took courses to improve or advance in current jobs or train for a new job. Probably another 250 thousand participated in some sort of vocational courses for avocational purposes.[11]

In addition to the formal education described above, the less formal role of American business firms in vocational education is becoming increasingly important. Little information is available concerning its extent. IBM boasts that its educational budget exceeds that of Harvard. Informal estimates claim that each year 3 million persons participated in programs of more than two days' duration sponsored by businesses.

It is virtually impossible to produce an unduplicated count of participants in employment-related or vocational programs. Roughly one American in ten age 14 and over participated for some length of time in such a program. The extent of participation declines with age. Roughly one out of four persons between the ages of 14 and 18 was instructed in a vocational program. The proportion declined to one in eight

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[11]Special tabulations of the U.S. Department of Education, NCES Survey of Participation in Adult Education, 1975.

for those 19-25, and was closer to one in twelve for those in the prime working ages 25-54. A very small proportion of persons age 55 and over was enrolled in vocational courses.[12]

Vocational education or vocational education and training is provided in a variety of settings. While it is impossible to give precise figures, it seems that (1) roughly half of the vocational activity is at the secondary level, and (2) half is at the postsecondary and adult level. In both segments of the vocational training enterprise, no more than half is focused on particular occupations. In the case of secondary programs, at least half of the training is in general industrial arts, homemaking and guidance. In the postsecondary sector, one-half of vocational training consists of general academic study. No wonder there is so much confusion in the minds of the average American about what constitutes vocational education and what does not.

Vocational Education from 1980 to 2000

In the next ten to twenty years, it is quite likely that vocational education will change to adapt to the new conditions of the labor market and the changing structure of the economy. Probably most of the present institutions will remain in place, but their functions will change quite drastically. A sketch of the possible direction of the change follows.

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[12]Cf. Data in Table 3 with U.S. Department of Education, NCES, The Condition of Education 1980, Government Printing Office, Washington, D.C.

Career education and guidance. The changing demographic, educational and industrial composition of the U.S. labor force is likely to affect each facet of the vocational education enterprise differently. The slower growth of the labor force, and the consequent slowing down of the promotion rates of younger workers is likely to impact the orientation of career education most drastically. Today, career education courses are designed to motivate youngsters to explore the career opportunities to which they might aspire. Tomorrow, they may be used as a cooling-off process for youths impatient with routine jobs. The stress in career education is likely to shift from entry job orientation to career ladders. For the vast majority of the labor force, these career ladders may appear unimpressive--they lead from service or unskilled jobs to better-paying blue- or white-collar jobs. It is unfortunate that we cannot know whether traditional career ladders will remain unchanged in the future. Labor force analysts, such as Thurow, who believe in screening effects of education, will argue convincingly that intermediate jobs will be increasingly pre-empted by more educated workers, who will be hired to fill lower-level supervisory jobs and thus block promotion opportunities for experienced, older workers with less educational attainment.

Those skeptical of the long-run promise of the present form of career education (except as a guidance scheme for entry-level jobs) will argue that career education must

become an indoctrination program, extolling the virtues of honest, backbreaking, blue-collar work. If it does perform such a function successfully and changes the perception in which different occupations are viewed, its role in assuring a cohesion in American society should not be underestimated.

As society moves again towards emphasizing the production of goods, the challenge of reconciling the aspirations of the 1960's and the 1970's with the realities of the 1980's and 1990's will be the challenge for vocational education. As the values of the elites filter down to mass consciousness, the importance of variety in the workplace and the immediate connection between one's work activity and a socially desirable goal will collide with a reality in which the majority of available jobs will remain hum-drum. More routine jobs will be filled by persons with more years of education.

The romantics who view tomorrow's industry as being fully automated have never visited a high technology plant. The majority of the work force there is involved in testing--an activity, which while physically less demanding, is boring, mindless and non-creative. In an automated plant, such as an oil refinery, the monitoring of control boards is a lonely, monotonous assignment. In conventional industry, the price of efficiency is often specialization, and this does little to create interesting jobs either. The motivation of an educated labor force in such circumstances requires viewing any type of work as significant, and the increased realization

that work is instrumental in providing not only the material means for a comfortable living, but also a product valued by others.

An anecdote will illustrate the challenge. A recent immigrant from the Soviet Union, not knowing any English, worked for a fast-food restaurant. She chopped onions and carrots for eight hours a day. In a few months, after she had learned some English, she approached her supervisor to complain that her co-workers did not realize, or appreciate, the important role they were playing in providing reasonably priced food for the masses. She suggested that the company sponsor worker meetings to explain this fact. Her supervisor snapped, "Shut up, and stop dicing the carrots so quickly."

Training programs. What can be done to instill positive attitudes towards work? Can youth programs be used to achieve this goal? During the past few years, in a slow-growth, inflation-ridden, over-regulated economy, a considerable amount of experimentation has been directed to this end. The most visible, and the most expensive, has been the CETA program.

Sooner or later, the experience of the CETA program will permeate most vocational training programs. Some of this experience is not easy to accept, because it goes against the liberal hopes that these programs would cause disadvantaged youths to be catapulted into highly skilled jobs. There is mounting evidence that the most successful CETA-sponsored

training is afforded by programs which focus on jobs which require fairly low levels of skills. The more ambitious programs designed to impart higher levels of skills fail to achieve their placement goals. We are finding out that youths from deprived backgrounds are more likely to be successfully trained for lower-level sales or low-skill mechanical jobs, and are less likely to compete successfully with other entry-level workers in more glamorous occupations such as data processing or higher-level clerical jobs.

CETA programs which have resulted in providing the best breaks for youngsters are the ones which provided short-range, intensive training for entry-level jobs in high-paying industries where local labor shortages existed. One notable example is the placement of youngsters with silicon chip manufacturers, another is the training in forestry by the U.S. Park Service. By contrast, short-term exposure in public service or government environments, reinforced by little or no formal training, has not paid off.[13]

Secondary programs. It is quite likely that the lessons of CETA will affect secondary program structure in the next ten years. Instead of increasing numbers of youths looking for jobs, demographic factors indicate a reduction in entry-age workers by as much as a third in the next five

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[13]Joseph Froomkin, J. R. Endriss, The Labor Market for 14-21-Year-Olds, Youthwork, Inc., 1980.

to seven years. In addition, the number of young people able and willing to take jobs may be further reduced by a military draft. Moving the orientation period to an earlier age will become extremely desirable.

There are certain preferred ways in which this challenge could be met. The most obvious is to equalize the exposure of the rich and the poor to the working environment. A youngster 14-16, whose parents are well-to-do, is more likely to have participated in the labor force sometime in the course of a year than a child raised in a family with more modest means.[14] The fact that early exposure to the requirements of holding down a job has a number of positive consequences on later labor force experience is finally being understood more fully.

The realization that two or maybe three years of occasional part-time or part-year experience are needed to acclimate young persons to the required discipline of holding down a full-time job is beginning to influence policy-making. Previous work experience is probably used as a signal to employers that the young applicant will turn out to be a reliable worker. Planners of youth programs are becoming increasingly aware of the importance of placing youths in environments where those young people will be faced with the challenge of having to produce something. Hanging around in a work location, especially in a government office, does not seem to

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[14] Ibid, p. 7.

do much good.

Under the circumstances, the broadening of employment opportunities to all strata of youths is likely to be high on the youth policy agenda. With the shrinking of the numbers of youths looking for work, it is quite likely that placements into work settings will be easier, and the challenge to vocational educators will be to supply marginal students with the minimum skills needed to hold down a job. In keeping with the long history of the responsiveness of our educational institutions to market conditions, vocational programs in the schools will probably take on two additional missions: (1) a placement function, as the school will increasingly become an employment center for teenagers, (2) an additional training function to provide minicourses to bolster the skills of marginal workers for the specific jobs in which they are placed.

No one has discovered an effective way of replacing the training provided by employers in specific skills needed to perform a given job. Most of these specific skills are relatively simple and each one can be taught in a short time. Furthermore, skills learned on one job are partially transferable to another job, so that the vast majority of workers, both young and old, accumulate little bits of knowledge as they move from job to job. The majority of blue-collar jobs, especially assembly-line jobs, do not require any lengthy training. Nevertheless, workers who have some familiarity

with the use or nomenclature of tools have a decided edge on those who do not. The extent to which this advantage will continue to be provided in work situations, and to what extent some of the burden will be shifted to the secondary education sector is not at all clear, since a number of contradictory tendencies will be affecting the marketplace.

On the one hand, the shortage of young workers ought to improve their bargaining position and make employers more willing to invest their own resources in short-term training needed to succeed in an entry job. On the other hand, two other developments may cause the demand for formal training to increase: (1) the slow-growing labor market may sharpen the competition for attracting new business by localities (localities may offer employers the inducement of providing a trained labor force to suit their requirements), (2) and it is quite possible that the eagerness of employers will be dampened by conditions of slow economic growth, both because of the relative stability of the U.S. population, and a labor force which is increasing in numbers slowly. Should this be the case, the competition for good jobs will remain quite stiff, and public authorities will continue their activity in training young persons from deprived backgrounds to compete more effectively for better port-of-entry jobs in a difficult labor market.

Most of the emphasis will probably be focused on service job training. There are a number of reasons to expect

this. In the first place, even though these jobs do not pay very well, they do require the mastery of numerous simple skills, which disadvantaged youngsters may not have. In the second place, most service establishments are relatively small and have neither the facilities nor the capacity to conduct formalized training programs. Much of the service industry both needs and deserves help from vocational educators.

Vocational preparation for artisanal industries, such as pastry-making, upholstery, etc., must be lengthened from a few months to two or three years. In this way, students would have the opportunity, through practicum, of learning the discipline of work and the trade. A consensus must be reached on the required behavioral outcomes--skills--for different occupations, so that the graduates can be evaluated. In many European countries, graduates of vocational programs are given tests by journeymen in appropriate occupations.

Superficially, this paper may appear to forecast that Continental European vocational training models will be adopted in the United States--this is only partially correct. While on the one hand, much can be learned from the way their programs are run, on the other hand, graduates of these programs should not necessarily be locked into the occupation for which they have been trained, as is often the case in Western Europe. On the contrary, the port-of-entry service jobs should continue to be used as stepping stones to better-paying semi-skilled and skilled jobs. If we are careful not to institutionalize

training to the ridiculous extent of requiring lengthy apprenticeships for every conceivable occupation (in Switzerland, it takes three years to become a restaurant waiter, and two years to become a cafe waiter), and thus restrict entry to most occupations, service jobs will continue to serve as port-of-entry positions for young workers, who later move on to better-paying positions.

Formal apprenticeships. The twists and turns of the economy, politics and the labor market are likely to affect the more formal apprenticeship programs as well. Currently, 400 thousand young workers participate in these programs which are sponsored by employers and unions. Most apprenticeship programs are in industries with (a) a strong union, and/or (b) fairly large firms, which employ the workers trained in these programs. In the U.S., formal apprenticeship programs are of fairly long duration (two to five years) and are restricted to either craft or highly skilled trades. Most apprenticeship programs are a mixture of on-the-job training and classroom instruction.

From the point of view of a labor-force analyst interested in job content, formal apprenticeship programs cater to widely diverse interests. On one end of the spectrum, the craft occupations require the apprentices to learn a large number of simple operations (such as carpentry), and on the other, the highly skilled trades require in-depth knowledge and a high level of skill of a rather limited number

of operations, usually relating to manipulation of complex mechanical equipment, e.g., tool and die making.

In the course of the next 10 to 15 years, a number of developments will threaten the jobs at both ends of the spectrum--not the least of these is the weakened jurisdiction of unions. Even in the home-building trades, unions are increasingly ineffective in opposing the prefabrication of housing components, installed on sites either by less-skilled or fewer skilled labor union members. The gradual crawl of industry into the sun-belt, where unions are weak, threatens other highly skilled craft occupations. The possibility of a conservative, and hence unfriendly, administration in Washington further dims the prospects of members of craft unions.

At the other end of the spectrum, in the mechanical trades, technology may deliver the unkindest cut of all: replace a large number of bulky, energy-hungry mechanical components by compact electronic or micro-chip assemblies. Thus, the number of jobs in mechanical occupations may either not increase or shrink.

New apprenticeship programs are not likely to spring up, because the electronic and micro-chip producers are very much hostages to the fortune of technology. The production process changes sometimes as often as every six months. To preserve their flexibility in assigning workers, most of them take energetic steps to ensure that their labor force is not unionized. Some pay higher than prevailing wages, others

are rabidly anti-union. In most instances, since no strong union is present, there is no institutional pressure to inaugurate formal apprenticeship programs--nor could they justify these programs, since their technology, and hence the required skills, change so rapidly.

For these reasons, the increased emphasis on blue-collar jobs in the labor force is not likely to result in a drastic expansion of formal apprenticeship programs. By contrast, community- or school-sponsored apprenticeship programs, in conjunction with CETA initiatives, may be established through different channels.

Postsecondary programs. The link between formal vocational education and jobs has never been documented to the satisfaction of academic social scientists. It is extremely difficult to trace the careers of young persons who graduate from vocational training programs. It is known that students who take vocational programs in high school are less likely to enroll in postsecondary courses, but some of them do, and others take additional short-term vocational courses. It is difficult to determine whether these additional courses generally build upon their high school experience or, alternatively, train them in other skills.

Analysts are relatively ignorant of vocational education's effect on careers of both dropouts and graduates of secondary courses; we have just begun to analyze the impact of postsecondary exposure upon vocational education students.

The only short-term (under two years) postsecondary courses which appear to produce any measurable benefits on the early careers of young persons are those which grant certificates. It has also been documented that longer-term, i.e., two-year, vocationally-oriented programs, do not necessarily put the participants in a better competitive posture vis-a-vis the job market compared to younger workers who entered the labor force directly after high school. The researcher who arrived at these conclusions after a thorough analysis of the follow-ups of the Longitudinal Study of the High School Class of 1972 pointed out that the variability in outcome between cities and regions of the country was quite high, and that selected programs, presumably oriented to local conditions, appear to have a very high payoff.[15]

The corollary finding of this study, not spelled out in the text, is that there is a parallel, informal on-the-job training program which operates and benefits workers who hold down jobs while their peers continue studying. The effectiveness of this informal system is quite startling: five years after graduation from high school, students who extended their education by taking vocational courses generally have jobs no different from those who entered the labor force directly.

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[15] David Selby, Short-Term Postsecondary Education and Work, Four Years After High School, Washington, D.C.: Joseph Froomkin Inc., 1980.

Another important finding of the study is that graduates of two-year academic postsecondary programs generally obtain somewhat higher status (though not necessarily better-paying) jobs compared to both high school graduates who entered the labor force soon after the end of their secondary education or those who followed clearly-labeled vocational programs. One can hardly escape the conclusion that some academic courses have vocational payoffs, especially for new entrants in white-collar, sales, and technical occupations.

One cannot be sure to what extent the results of the study are a portent of the future. The period during which the last follow-up was conducted was one of relatively high unemployment, eight percent nationally. Job opportunities of all young entrants were necessarily depressed by these unfavorable economic circumstances. Nevertheless, studies of this type, which compare educational attainment of workers by level of skills, do not make one optimistic about the economic value of short-term postsecondary education.

Between 1960 and 1970, and especially between 1970 and 1980, the jobs filled by workers with less than four years of college became less distinguishable from those held by persons with no postsecondary education. Higher status jobs were pre-empted by the increasingly numerous college graduates.

How will these developments affect postsecondary vocational training? Hard-nosed classical economists, who

contend that the costs and benefits of acquiring additional education are the important, if not dominant, factor in determining the level of demand for schooling, would start ringing the death-knell of this segment of the educational establishment. Realists would argue that the future of full-time vocational postsecondary education is not as dismal, as long as course offerings continuously adapt to job openings.

There is some evidence that the postsecondary education is becoming more flexible. Local community college systems are increasingly concerned about training persons for available jobs. Some systems, especially in the sun-belt, enter into close cooperative arrangements with present and prospective employers (plants planning to locate in their area) to train workers needed by these employers. Community colleges in California have a long tradition of retraining workers for defense contractors to enable them to keep up with changes in military technology.

The symbiotic relationship between employers and vocational trainees will undoubtedly keep on growing. In some instances, it will take the ugly aspects of unfair competition, when an area with high unemployment will attempt to beggar-its-neighbors by attracting new industry. As communities measure their success by growth of population and employment, the incentives to foster this competition will increase especially in a period when both population and the labor force are not growing very rapidly.

The increasing competition is very likely to affect not only the content, but also the composition of the vocational teaching force. If vocational education is to follow the zigs and zags of demand by employers, the instructional personnel will either have to be retrained continuously in new techniques, or a new cadre of instructors already familiar with the necessary techniques will have to be hired. In either case, the function of the vocational education manager will become more complex, as he will be obliged either to retrain his teachers, or to hire new ones. The potential of more formalized training aids, possibly linked to some computer system, should be investigated in that connection.

Even if full-time study is less likely to be justified in economic terms, with the exception of courses which guarantee placement in a well-paying profession, full-time vocational courses will not necessarily lose their popularity in proportion to their economic disadvantage. As long as postsecondary attendance is highly subsidized (with tuition kept low by direct subsidies to school, and out-of-pocket attendance costs minimized through a series of student-aid programs), a young high school graduate from a family with modest means may be better off enrolling in a postsecondary institution full-time, while looking around for his first job. If the potential worker is not eligible for unemployment, even the small amount of student aid may be a substantial inducement to enrollment.

This hypothesis has not been tested empirically.

In all probability, the lion's share of vocational education will be offered on a part-time basis. It will appeal to three groups of potential students:

(1) those early labor-force entrants who have stop-gap jobs, and who seek training for more promising occupations,

(2) a somewhat older group in similar circumstances, who are either seeking promotions or are trying to upgrade and extend their occupational choices, and

(3) persons trying to gain vocational skills for non-job related reasons, e.g., homeowners who want to perform their own repairs, computer buffs wishing to improve their programming skills, etc.

This third group, which accounted for 15-20 percent of enrollees in all technical and vocational courses, is likely to be a most resilient group. Even if the average affluence of the American public does not grow rapidly, the increasing average age of the population will result in more households having important stocks of possessions, all of which are likely to need routine maintenance or repairs. The demand of do-it-yourselfers for vocational and technical training courses is likely to become a stronger component of the adult education scene.

The prospects for other segments of adult education are decidedly less buoyant. In 1975, one out of eleven adult education students was a teacher, studying either for an advanced degree, for a certificate, or to satisfy other occupation-related requirements. As teachers age and opportunities for promotion to supervisory slots diminish, their motivation

to pursue further will decline. Similar comments apply to the other important group of adult vocationally oriented students: managers, who accounted for 8 to 10 percent of the total enrollment.[16]

Only if credentials are perceived as valuable will adult education continue to attract large numbers of students. However, women insecure of their prospects, about to re-enter the work force as well as job changers of both sexes may continue to enroll.

New Sources of Demand for Vocational Education

It has been assumed throughout this discussion that the balance of economic power between management and labor, the states and the federal government, and the educators and the taxpayers is likely to remain unchanged. This is a comfortable assumption, but one which could prove to be wrong.

One can easily envisage that in response to foreign competition, new programs by the federal government may be initiated to subsidize business. One possibility is a program directed at the improvement in the effectiveness of the U.S. labor force. It could take the form of a credit against tax (rather than income) of some percentage of the payroll, on condition these moneys were utilized for formal training, not connected with production. Under these circumstances, the volume of vocationally-oriented training could boom.

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[16] U.S. Department of Health, Education, and Welfare, NCES, Participation in Adult Education, Final Report 1975, U.S. Government Printing Office, Washington, D.C., 1978, p. 36.

However, such legislation is not likely to be passed. In the next two decades, some nine out of ten new labor force entrants will be high school graduates, and nearly half will have benefited from some vocational or academic postsecondary training. Under these circumstances, it will be difficult to argue that more training or education is necessary than the levels already provided in our society. Of course, if pressure groups restrict entry by requiring credentials or licenses for jobs where these attributes are only marginally relevant, vocational education could experience a rebirth.

The arguments for the need to step up the retraining of an aging work-force could, on the surface, appear more cogent. But, past experience does not lead one to believe that these are valid. While the content of the new technologies changes, the change of the work-content of the step-by-step process to build the components or to integrate them into assemblies is very slow. According to a recent Wall Street Journal article, highly-paid mechanically-oriented workers, who are likely to be displaced by the introduction of new technologies, shun these new jobs not because of lack of skills, but because of the lower pay in high technology industries.

It is not clear, in the present political climate, whether it will be possible to subsidize specific training offered by employers, more heavily with public funds. An issue which has not been addressed concerns the equity of shifting the training costs of workers from business to the community.

Defense-oriented businesses, which survive only by being lowest bidder, have been successful in shifting these costs to communities. No one can say with certainty that other businesses will not follow in its footsteps. If business is successful in inducing public authorities to foot more of the training bill, it is quite likely that much of the informal learning which occurs on the production line and the office will be shifted to the formal settings supervised by vocational educators. Some employers, especially in aerospace, lend equipment to educational institutions, and students are trained to use the equipment in an educational setting.

As long as employers continue to take an important role in the training of the labor force, and as long as their production processes are specific to a given plant, broad based vocational/technical education could only provide either the baseline skills needed to fit into a work environment or the theoretical skills needed to design and plan the production process most suitable for a given product.

Will the prospect of subsidizing the bigger-than-average firm, which can justify a training program of its own, offset the social equity argument? If some compromise is reached to provide incentives to business to assist in furthering the social objectives of training minority and disadvantaged youths, one can anticipate the establishment of formal vocational and technical programs. More likely, the compromise will probably take the form of subsidies, equal to

the extra costs incurred in training marginal job applicants who belong to target groups which the government wants to help.

Such arrangements are probably superior to the alternative of a vast national plan to train workers. The discussion above has stressed that the outcome of training depends to a large extent upon local labor market conditions. National programs are not likely to be fine-tuned to these local developments. As long as individual entrepreneurship governs investment decisions, the choice of plant location and the level of production of different businesses, centralized planning is not likely to satisfy the local ebb and flow of labor demand.

Thus the U.S. is highly unlikely to adopt the kind of incentives to vocational and technical training introduced in Europe. A number of countries there require businesses to set aside one percent of their payroll to finance additional training of the labor force. In the first few years after the program was introduced, most of the funds were spent by managers and professionals for their own training. There was little evidence that adaptation to new technologies was facilitated by these new retraining schemes. It is likely that similar incentive programs would be even less effective in the United States. In the first place, most management personnel are already relatively well-trained--in fact, it could possibly be argued that they are too well-trained. Furthermore, in the course of the next 15 to 20 years, the supply of freshly-trained college graduates is likely to exceed demand and new technological

managerial talent will be more than plentiful. In Europe, by contrast, only a small proportion of the managers are college or university graduates.

Looking at Europe again, one is tempted to pay attention to another potential source of vocational and technical training. In a number of European countries, college graduates in the arts and humanities who were unable to obtain port-of-entry professional or managerial jobs have been entering in increasing number into blue-collar or service vocational training programs. This aberration is less likely to occur in the United States--college graduates not likely to qualify for professional or managerial jobs are more likely to find themselves in white-collar or sales jobs. In Europe, especially in large enterprises covered by union contracts, starting salaries in all white-collar jobs are determined by the educational attainment of the new hires. Hence, lower-level clerical and sales jobs which do not require a college education cannot be filled by college graduates without increasing the employers' costs. By contrast, in the United States, the white-collar labor force is generally not unionized and even in those cases when it is, there are seldom any provisions to pay workers more when they have higher educational attainment. (The public service sector is a notable exception.)

In the U.S., the jobs open to those holding various university degrees are thus much more diverse than in Europe. This flexibility is one of our strengths and one can only hope

that this strength shall be preserved.

Finally, one can imagine one additional set of circumstances which may produce a spurt of vocational education demand. Try to imagine an American economy rededicated to excellence and a concern for quality. In these circumstances, workers would be dedicated to their jobs, super-competitive with their peers and eager to qualify themselves for more skilled or more prestigious employment. To do their jobs better and in order to be considered for a promotion, workers would enroll in vocational and occupational courses more often than they do now. This development is not likely to materialize either unless the union system atrophies, and seniority stops playing a predominant role in determining eligibility for promotion.

Summary and Conclusion

We would be much more prudent to plan for a future where despite the greater emphasis on production, the slower growing working force, and the greater reliance on new technology, no boom in vocational education is likely to occur. If anything, the forces of demographic change are likely to reduce the volume of demand for vocational education. The heaviest participants in vocational education, the 14-18-year-old group, will decline by 20 percent between now and 1990, and will not increase appreciably between that date and 2000. The second group most likely to seek vocational education, persons 19-30, will be 10 percent smaller than the cohort

of the same age today, by the end of the millennium.

Two other factors are likely to threaten the level of vocational activities. The much tighter labor market for "good" jobs will reduce the scope, and hence the attractiveness, of sophisticated career guidance services. They are now offered indiscriminately to all those willing to try them. I believe that in the future, they will be restricted to narrower groups of the student population, those most likely to succeed. Also, the women's liberation movement may adversely affect enrollments in homemaking courses, which still account for one-quarter of the vocational enrollment.

In the postsecondary and adult vocational education sector, the contraction, if any, will be less pronounced. As competition for promotions sharpens, more workers will try to better their chances by enrolling in job-related programs. It is possible, though, that older workers passed over for promotion may stop enrolling. Also, the reduction in the number of school children will cause a shrinking in the teaching force, and will also affect adversely the demand for adult academic courses by this group of workers.

As competition for jobs intensifies, the vocational system is likely to become increasingly oriented to imparting specific skills. It is also likely that this new orientation will enable vocational educators to establish even closer linkages with industry. The vocational program will become increasingly both a training and placement program.